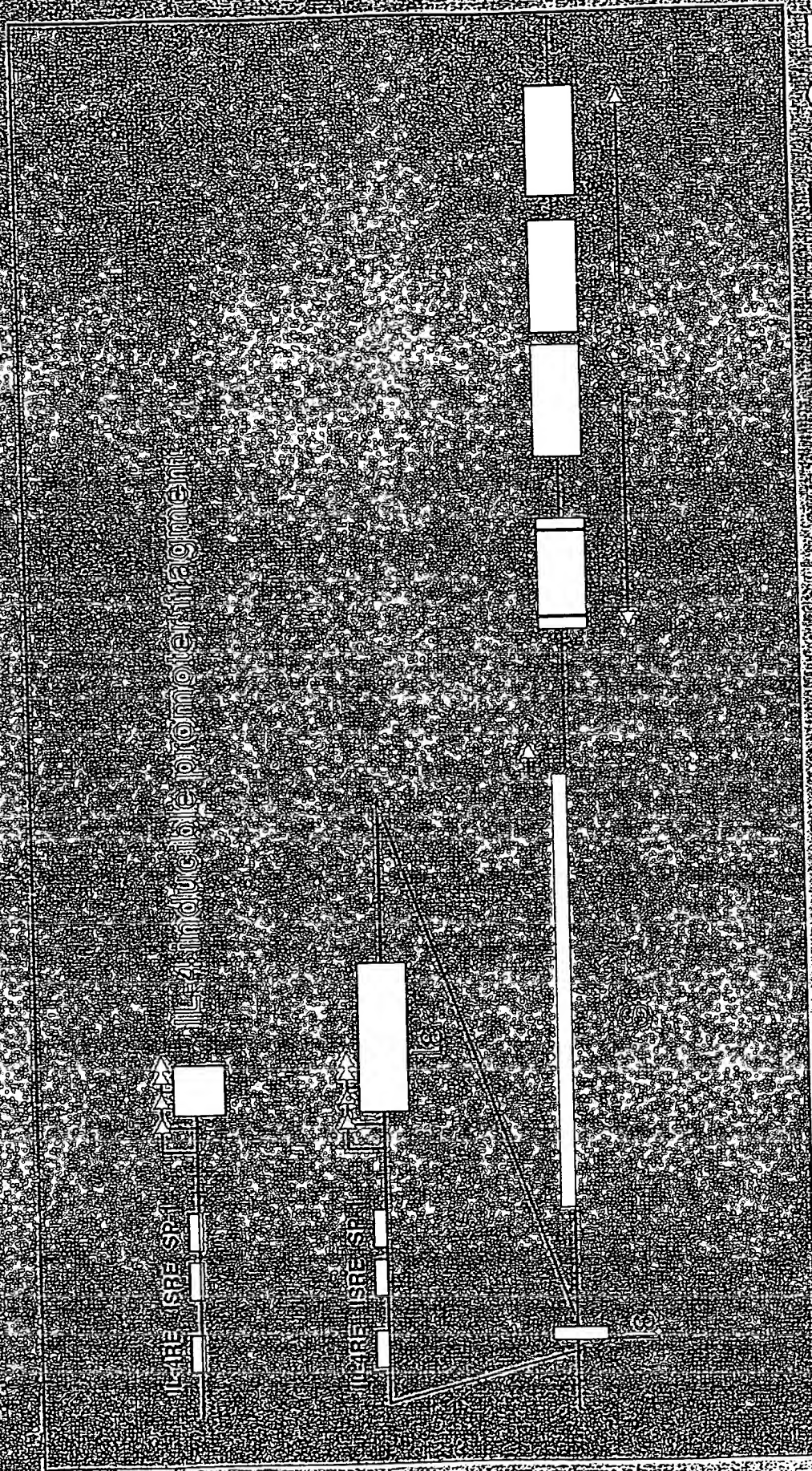


FIGURE 1A

CTCGAGGACAGTGACCTGGGAGTGAGTACAAGGTGAGGCCACCACTCAGGGT
GCCAGCTCCAAGCGGGTCACAGGGACGAGGGCTGCGGCCATCAGGAGGCCCT
GCACACACATCTGGGACACGCGCCCCCGAGGGCCAGTTCACCTCAGTGCGCCT
CATTCTCCTGCACAAAAGCGCCCCCATCCTTTCTTCACAAGGCTTTCGTGGAAG
CAGAGGCGTCGATGCCCAGTACCCTCTCCCTTTCCCAGGCAACGGGACCCCAA
GTTTGCTGACTGGGACCACCAAGCCACGCATGCGTCAAGAGTGAGAGTCCGG
GACCTAGGCAGGGGGCCCTGGGGTTGGGCCTGAGAGAGAAGAGAACCTCCCCC
AGCACTCGGTGTGCATCGGTAGTGAAGGAGCCTCACCTGACCCCGCTGTTGC
TCAATCGACTTCCCAAGAACAGAGAGAAAAGGGAACCTCCAGGGCGGCCCCGG
GCCTCCTGGGGGTTCCCACCCCATTTTTAGCTGAAAGCACTGAGGCAGAGCTC
CCCCTACCCAGGCTCCACTGCCCCGGCACAGAAATAACAACCACGGTTACTGAT
CATCTGGGAGCTGTCCAGGAATTC

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Germ-line Locus



ORIGINAL

FIGURE 1B

Low energy DNA folding of the S_E region

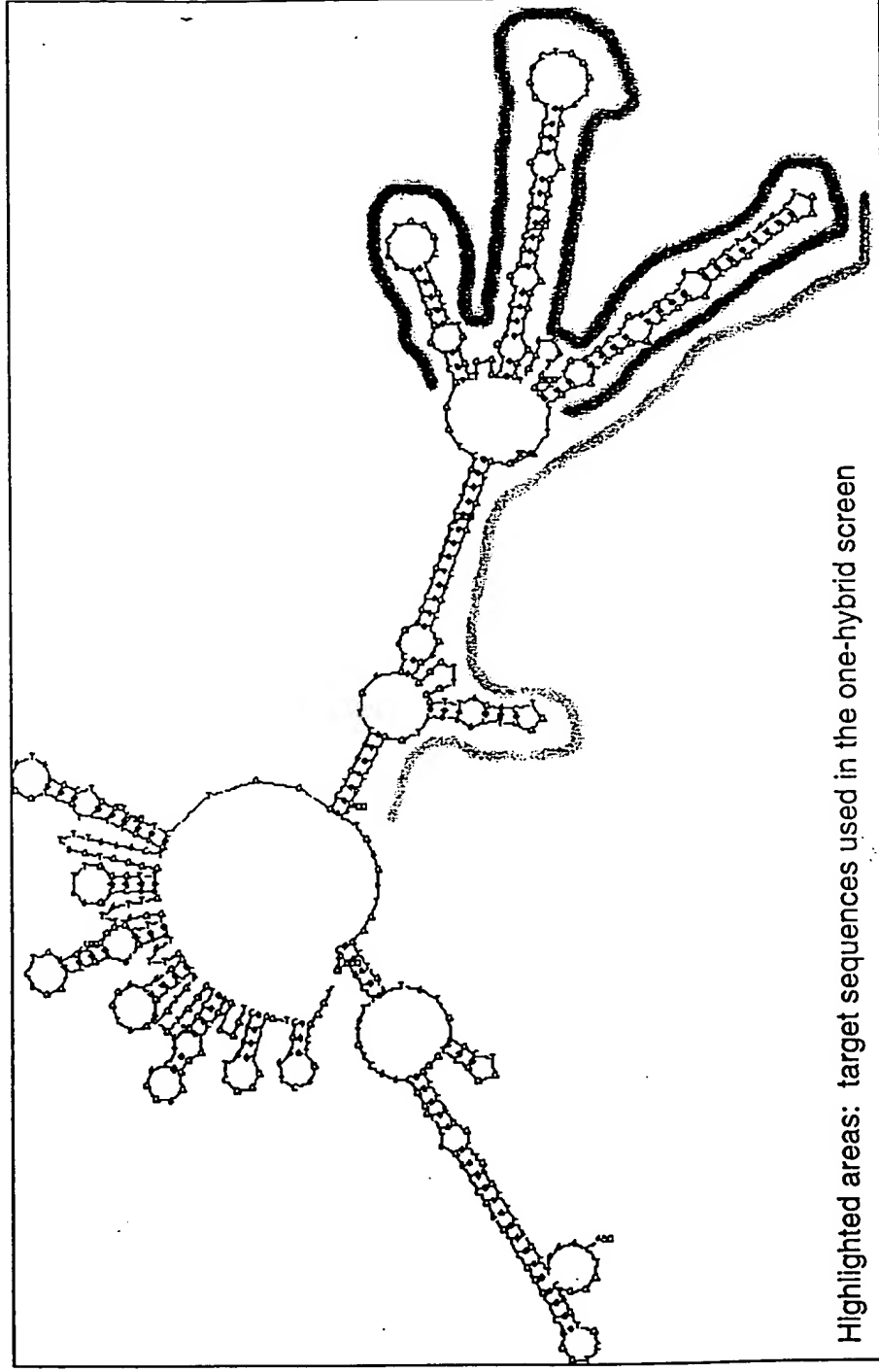


FIG 2A

FIGURE 2B

1 GCTGGGCTAA ACTGGGCTAG CCTGAGCTGG GCTGAACTGG GCTGCTGGGC
51 TGGACTGGGT AAGCTGGGCT GAGCTGGGTT GGGTGGAAAT GGGCTGAGCT
101 GAGCTAGGCT AACTGGGTT TGGCTGGGCT GGGCTGGGCT GGG

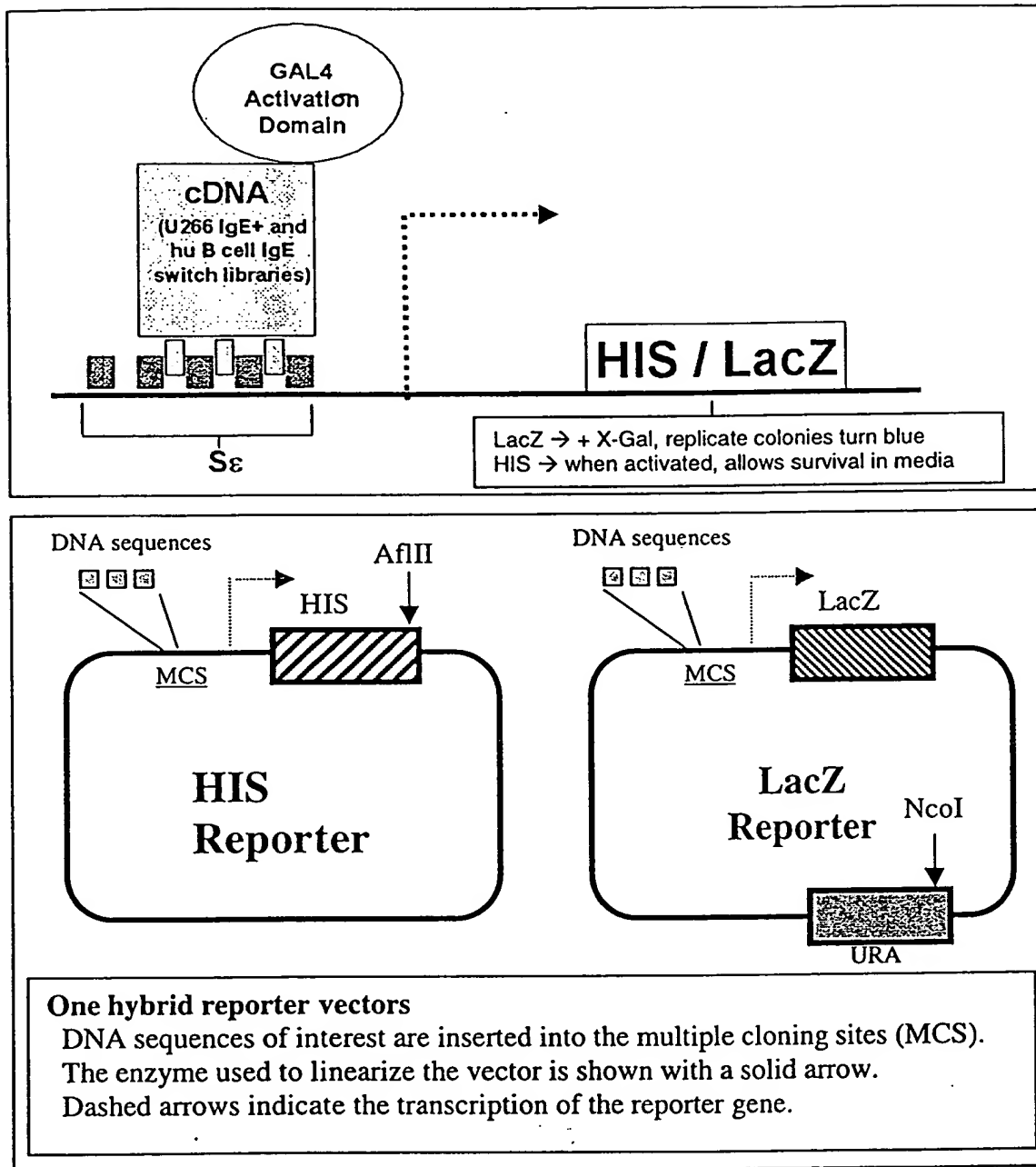
FIGURE 2C

1 GGTTTGGCTG GGCTGGGCTG GGCTGGGCTG GGTCAGCTG AGCGGGTTGG
51 GTTAGACTGG GTCAAACCTGG TTCAGC

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FIG 3

Appendix F Yeast One-Hybrid Screening



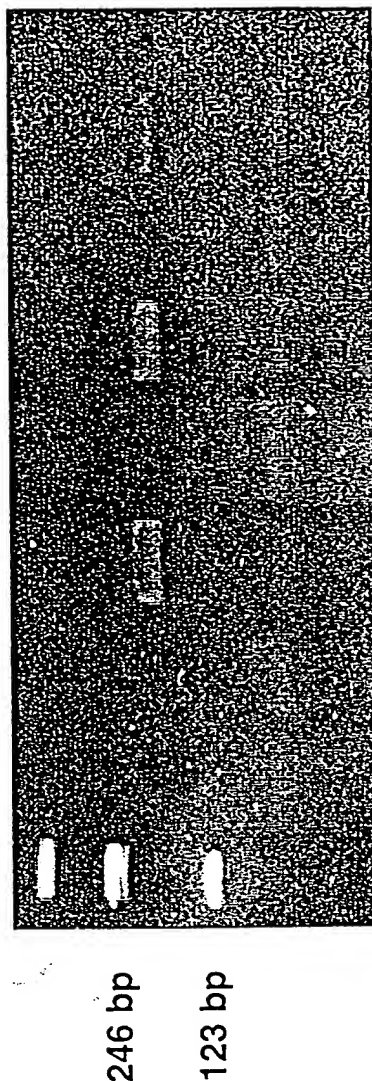
0963247-09594

FIG 4

IL-4 Induction of Germline ϵ mRNA in the IgM+ B cell lines: CA-46, MC-116 and DND39

Cells were incubated for 48 hrs in 300 U/ml of h-IL-4. RT-PCR was performed using primers specific for the germline ϵ exon and the 5'-end of the ϵ CH1 exon (predicted size ~ 200 bp).

DND39 + IL-4
DND39 - IL-4
MC-116 + IL-4
MC-116 - IL-4
CA-46 + IL-4
CA-46 - IL-4
Neg cont.



Approaches to generate germline ϵ promoter knock-in reporter cell lines

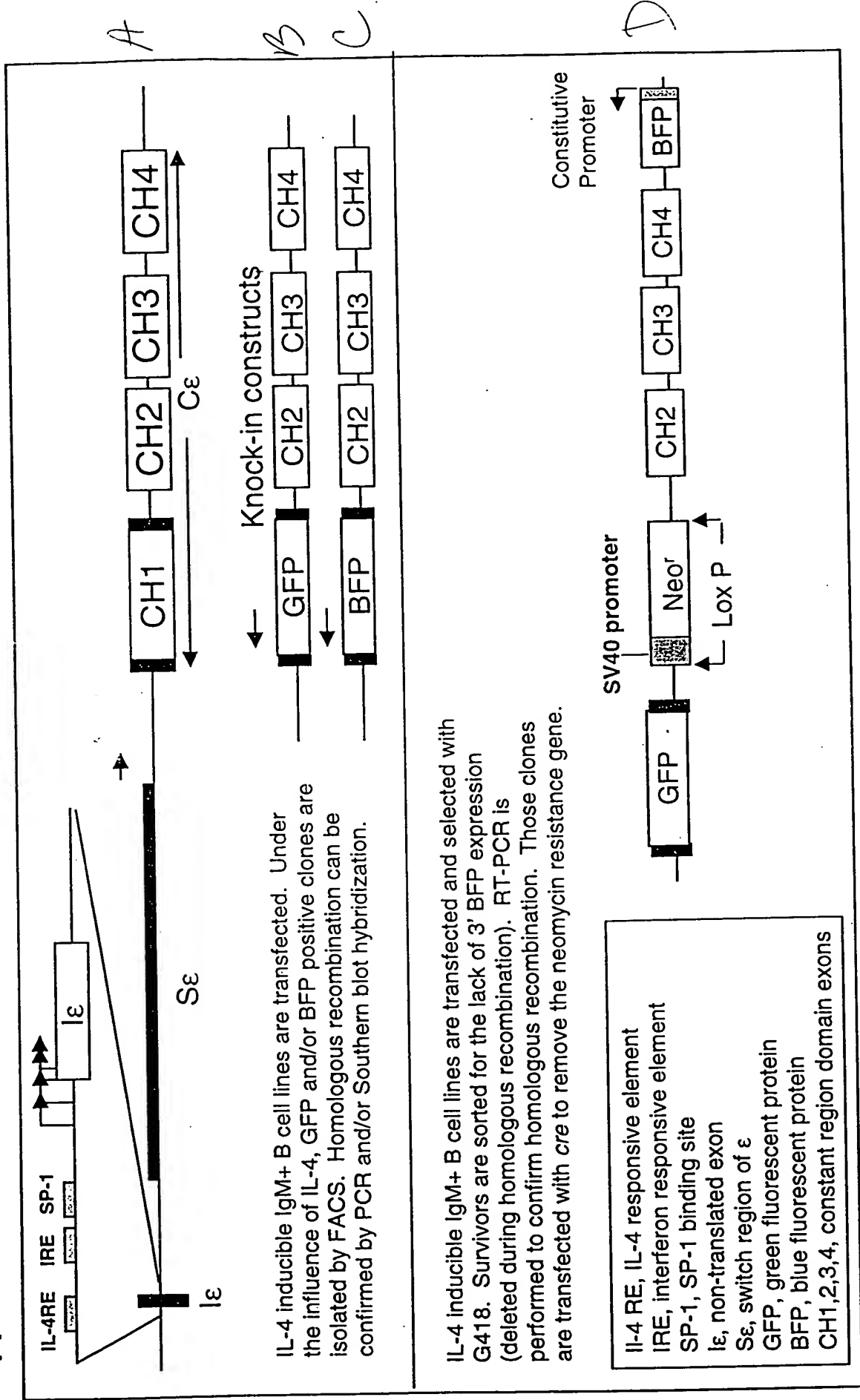
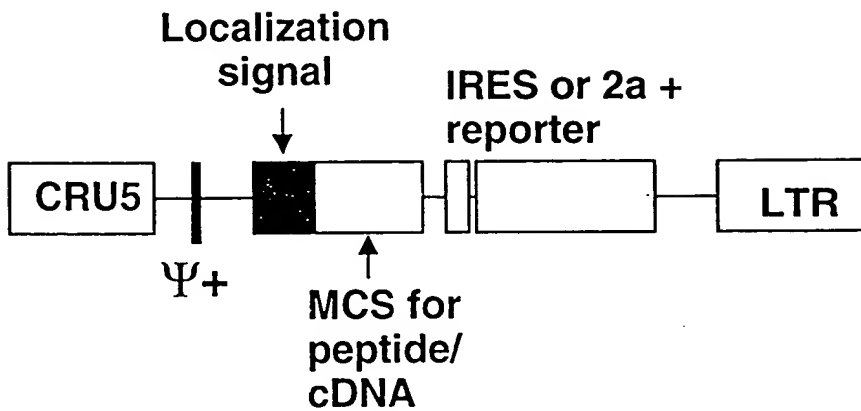


FIG 6

Appendix I

Rigel Base Vector



All components are cassetted for flexibility

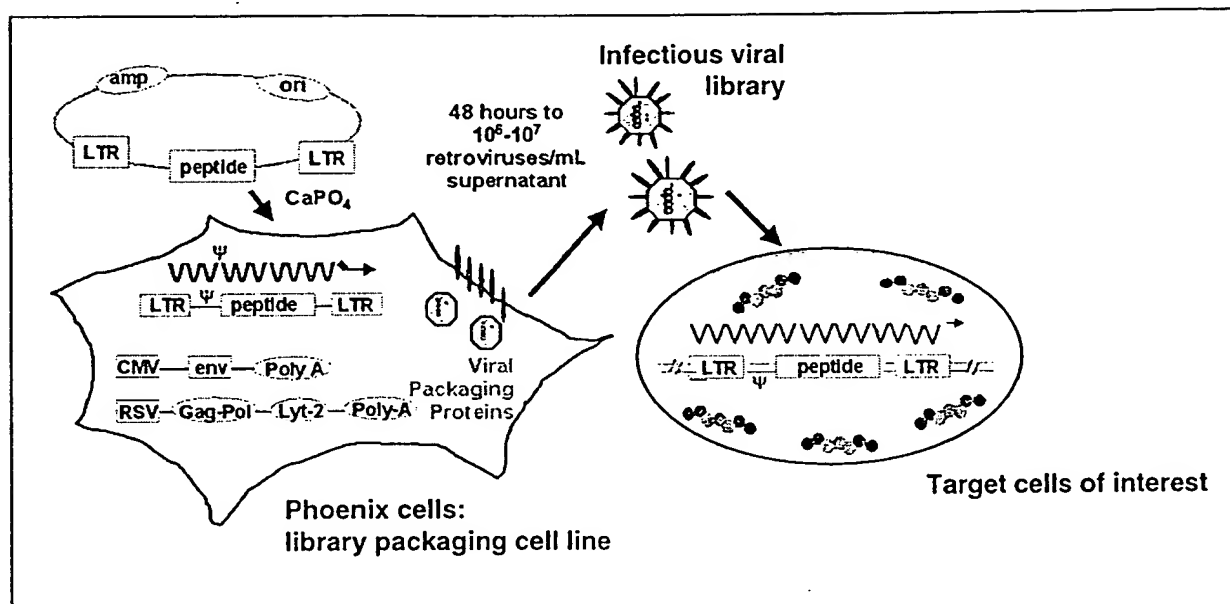
CRU5, modified LTR
LTR, long terminal repeat
Ψ+, packaging signal
Localization signal: nuclear, cell membrane, granular
MCS, multiple cloning site
IRES, internal ribosome entry site
2a, self-cleaving peptide

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FIG 7

Appendix H

Protocol for Transfection of Phoenix Cells and Infection of Nonadherent Target Cells

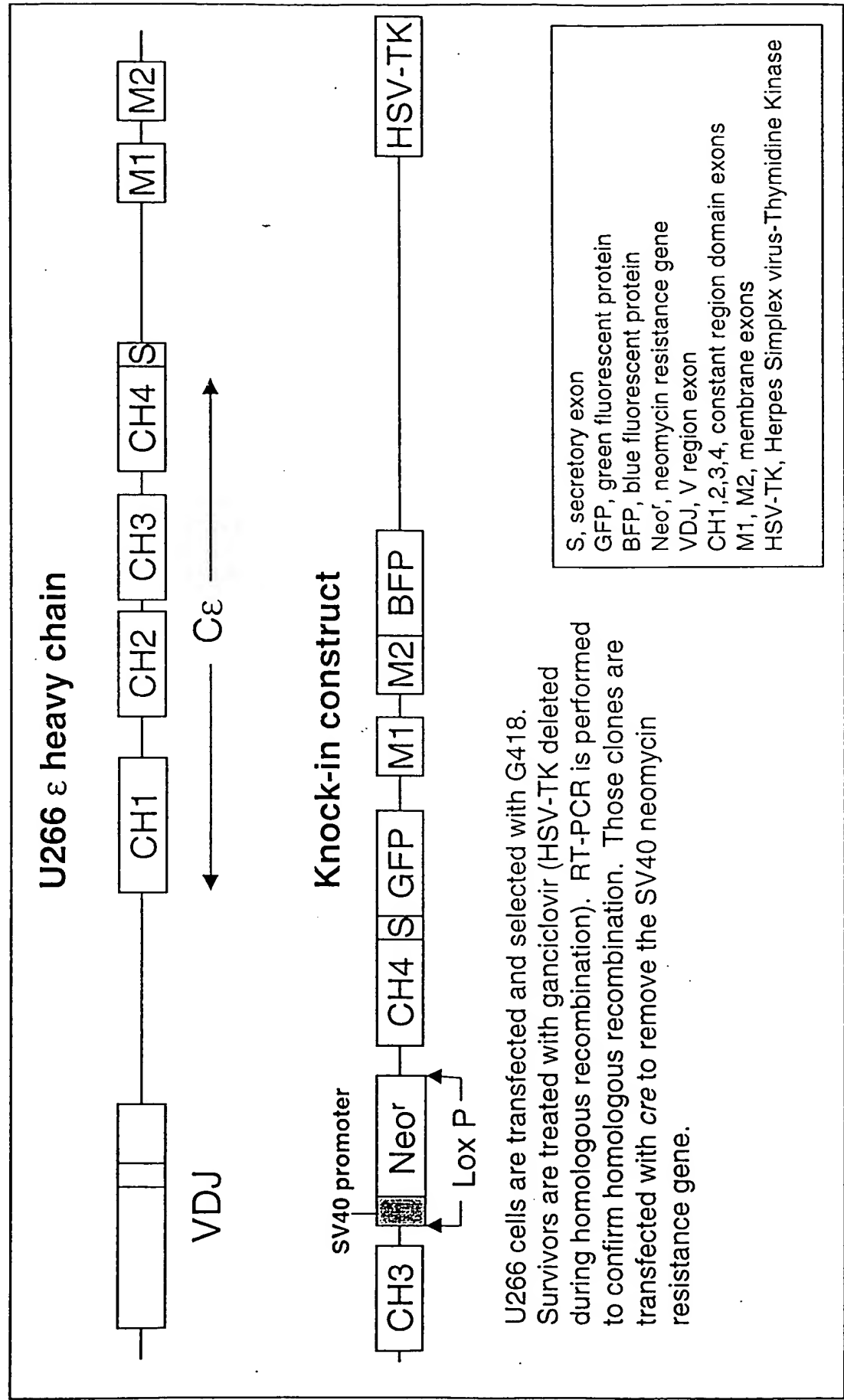


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FIG 8

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ϵ heavy chain GFP/BFP knock-in cell line



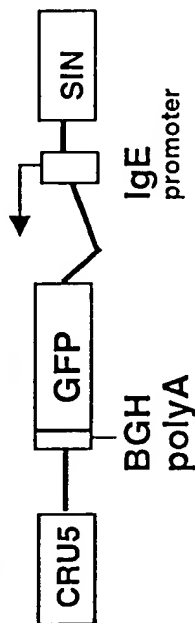
U266 cells are transfected and selected with G418. Survivors are treated with ganciclovir (HSV-TK deleted during homologous recombination). RT-PCR is performed to confirm homologous recombination. Those clones are transfected with *cre* to remove the SV40 neomycin resistance gene.

Appendix D

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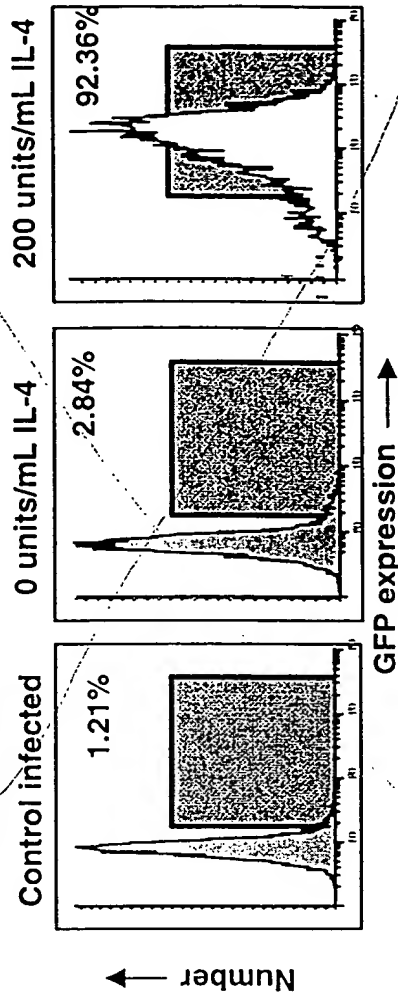
IL-4 Inducible ϵ Promoter Reporter Cell Line

Reporter construct



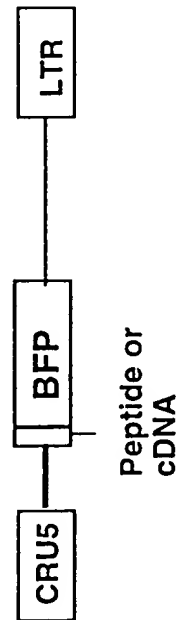
CRU5, hCMV promoter plus R and U5 regions of LTR
GFP, green fluorescent protein
BGH poly A, bovine growth hormone poly-adenylation signal
SIN, self-inactivating LTR

IL-4 induced reporter



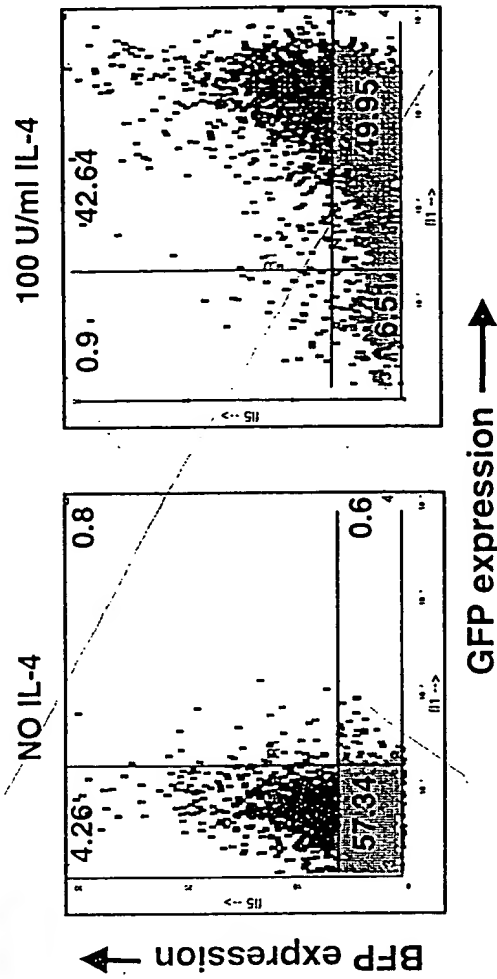
Reporter Line Infected with BFP Construct

Library construct



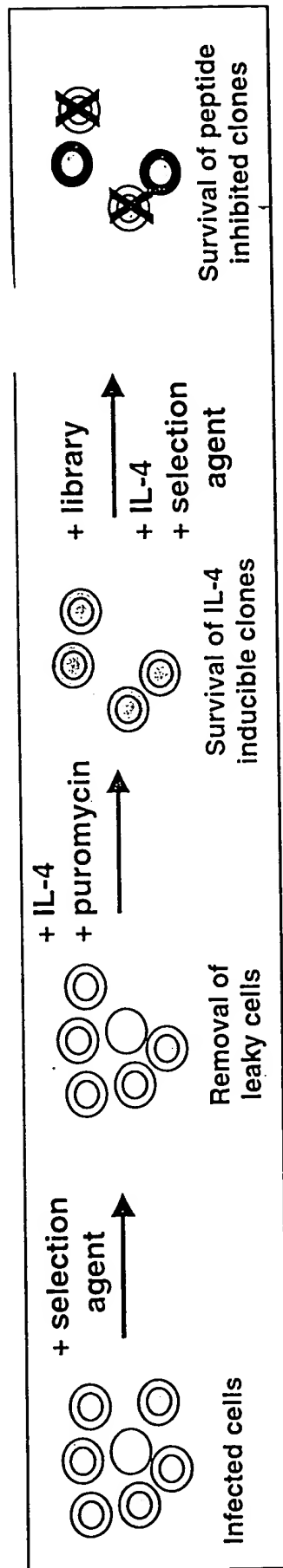
BFP, blue fluorescent protein

FACS profile of cells with both reporter and peptide library

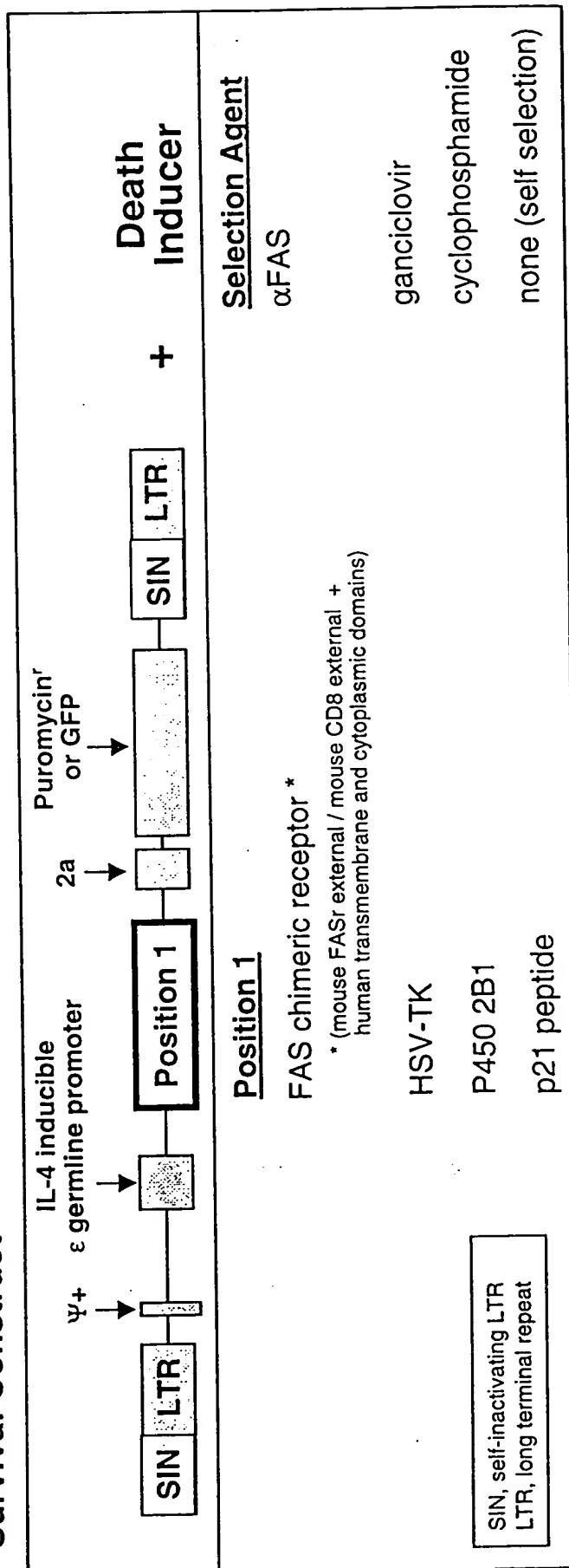


Appendix C

Screen for Peptide Inhibitors of the Germline ϵ Promoter



Survival Construct



All components are cassetted for flexibility

Appendix D

FIGURE 11A-1

1-845 CMV promoter/R/U5 5' LTR
 1322 GAG ATG-ATC mutation
 850-2100 extended ψ region
 2146-2173 two Bstx1 peptide cloning sites
 2205-2723 ECMV IRES (cloned as EcoR1/MscI fragment from
 pCITE-4a [Novagen])
 2746-3465 GFP coding region
 3522-4115 3' LTR
 4122-6210 pGEM backbone (pUC origin, ampR)

ATCACGAGGCCCTTTCGTCTTCAAGAACAGCTTTGCTCTTAGGAGTTTCCTAATACATCC
 CAAACTCAAATATATAAAGCATTTGACTTGTTCTATGCCCTAGTTATTAATAGTAATCAA
 TTACGGGGTCATTAGTTCATAGCCCATATATGGAGTTCGCGTTACATAACTTACGGTAA
 ATGGCCCCGCTGGCTGACCGCCCAACGACCCCGCCCATGACGTCAATAATGACGTATG
 TTCCCATAGTAACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGT
 AAAGTGGCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTACGCCCCCTATTGACG
 TCAATGACGGTAAATGGCCCCGCTGGCATTATGCCCAGTACATGACCTTATGGGACTTTC
 CTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGATGCGGTTTTGGC
 AGTACATCAATGGGCGTGGATAGCGGTTTGACTCACGGGGATTTCCAAGTCTCCACCCCA
 TTGACGTCAATGGGAGTTTGTGTTTGGCACCAAAATCAACGGGACTTTCCAAAATGTCGTA
 ACAACTCCGCCCCATTGACGCAAATGGGCGGTAGGCATGTACGGTGGGAGGTCTATATAA
 GCAGAGCTCAATAAAAGAGCCCAACCCCTCACTCGGGGCGCCAGTCCCTCCGATTGACT
 GAGTCGCCCCGGGTACCCGTGTATCCAATAAACCCCTCTTGCAAGTTGCATCCGACTTGTGGT
 CTCGCTGTTCTTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGTCAGCGGGGGTCTTT
 CATTTGGGGGCTCGTCCGGGATCGGGAGACCCCTGCCAGGGACCACCGACCCACCACCG
 GGAGGTAAGCTGGCCAGCAACTTATCTGTGTCTGTCCGATTGTCTAGTGTCTATGACTGA
 TTTTATGCGCCTGCGTCGGTACTAGTTAGCTAACTAGCTCTGTATCTGGCGGACCCGTGG
 TGGAAGTACGAGTTTCGGAACACCCGGCCGCAACCCTGGGAGACGTCCCAGGGACTTCGG
 GGGCCGTTTTTGTGGCCCGACCTGAGTCCAAAAATCCCGATCGTTTTTGGACTCTTTGGTG
 CACCCCCCTTAGAGGAGGGATATGTGGTTCTGGTAGGAGACGAGAACCTAAAACAGTTCC
 CGCCTCCGTCTGAATTTTTGCTTTTCGGTTTGGGACCGAAGCCGCGCCGCGCTTGTCT
 GCTGCAGCATCGTTCTGTGTTGTCTCTGTCTGACTGTGTTTCTGTATTTGTCTGAAAATA
 TCGGCCCCGGGCCAGACTGTTACCACTCCCTTAAGTTTGACCTTAGGTCACCTGGAAGATG
 TCGAGCGGATCGCTCACAACCAGTCGGTAGATGTCAAGAAGAGACGTTGGGTTACCTTCT
 GCTCTGCAGAATGGCCAACTTTAACGTCGGATGGCCGCGAGACGGCACCTTTAACCGAG
 ACCTCATCACCCAGGTTAAGATCAAGGTCTTTTACCTGGCCCGCATGGACACCCAGACC
 AGGTCCCCTACATCGTGACCTGGGAAGCCTTGGCTTTTGACCCCCCTCCCTGGGTCAAGC
 CCTTTGTACACCCTAAGCCTCCGCCTCCTCTTCCCTCCATCCGCCCCGTCTCTCCCCCTTG
 AACCTCCTCGTTTCGACCCCGCCTCGATCCTCCCTTTATCCAGCCCTCACTCCTTCTCTAG
 GCGCCCCCATATGGCCATATGAGATCTTATATGGGGCACCCCGCCCCCTTGTAAGTCTCC
 CTGACCCTGACATGACAAGAGTTACTAACAGCCCCCTCTCTCCAAGCTCACTTACAGGCTC
 TCTACTTAGTCCAGCACGAAGTCTGGAGACCTCTGGCGGCAGCCTACCAAGAACAAGTGG
 ACCGACCGGTGGTACCTCACCTTACCGAGTCGGCGACACAGTGTGGGTCCGCCGACACC
 AGACTAAGAACCTAGAACCTCGCTGGAAAGGACCTTACACAGTCCTGCTGACCACCCCA
 CCGCCCTCAAAGTAGACGGCATCGCGCTTGGATACACGCCGCCACGTGAAGGCTGCCGA
 CCGCGGGGGTGGACCATCCTCTAGACTGCCGGATCTCGAGGGATCCACCACCATGGACCC
 CCATTAAATTGGAATTCCTGCAGCCCCGGGGGATCCACTAGTTCTAGAGCGAATTAATTCC

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FIGURE 11A-2

GGTTATTTTCCACCATATTGCCGTCTTTTGGCAATGTGAGGGCCCGGAAACCTGGCCCTG
TCTTCTTGACGAGCATTCCTAGGGGTCTTTCCCCTCTCGCCAAAGGAATGCAAGGTCTGT
TGAATGTCGTGAAGGAAGCAGTTCTCTGGAAGCTTCTTGAAGACAAACAACGTCTGTAG
CGACCCCTTTGCAGGCAGCGGAACCCCCACCTGGCGACAGGTGCCTCTGCGGCCAAAAGC
CACGTGTATAAGATACACCTGCAAAGGCGGCACAACCCAGTGCCACGTTGTGAGTTGGA
TAGTTGTGGAAGAGTCAAATGGCTCTCTCAAGCGTATTCAACAAGGGGCTGAAGGATG
CCCAGAAGGTACCCCATTTGTATGGGATCTGATCTGGGGCCTCGGTGCACATGCTTTACAT
GTGTTTAGTCGAGGTTAAAAACGTCTAGGCCCCCGAACCACGGGGACGTGGTTTTCCT
TTGAAAAACACGATGATAATATGGGGGATCCACCGGTGCGCACCATGGTGAGCAAGGGCG
AGGAGCTGTTACCGGGGTGGTGCCCATCTGGTTCGAGCTGGACGGCGACGTAAACGGCC
ACAAGTTCAGCGTGTCCGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCCTGA
AGTTCATCTGCACCACCGGCAAGCTGCCCCGTGCCCTGGCCACCCCTCGTGACCACCCTGA
CCTACGGCGTGCAGTGCTTCAGCCGCTACCCCGACCACATGAAGCAGCAGCACTTCTTCA
AGTCCGCCATGCCCCGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCA
ACTACAAGACCCGCGCCGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGC
TGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAAC
ACAACAGCCACAACGTCTATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAAC
TCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGA
ACACCCCATCGGCGACGGCCCCGTGCTGCTGCCCGACAACCACTACCTGAGCACCCAGT
CCGCCCTGAGCAAAGACCCCAACGAGAAGCGCGATCACATGGTCTGCTGGAGTTCGTGA
CCGCCCGCGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAAAGCGGCCGCTCGACGA
TAAATAAAAGATTTTATTTAGTCTCCAGAAAAAGGGGGGAATGAAAGACCCACCTGTA
GGTTTGGCAAGCTAGCTTAAGTAACGCCATTTTGCAAGGCATGGAAAAATACATAACTGA
GAATAGAGAAGTTCAGATCAAGGTCAGGAACAGATGGAACAGCTGAATATGGGGCAAACA
GGATATCTGTGGTAAGCAGTTCTTGCCCCGGCTCAGGGCCAAAGAACAGATGGAACAGCTG
AATATGGGGCAAACAGGATATCTGTGGTAAGCAGTTCTTGCCCCGGCTCAGGGCCAAAGAA
CAGATGGTCCCCAGATGCGGTCCAGCCCTCAGCAGTTTCTAGAGAACCATCAGATGTTTC
CAGGGTGCCCCAAGGACCTGAAATGACCCTGTGCCTTATTTGAACTAACCAATCAGTTTCG
CTTCTCGCTTCTGTTTCGCGCGCTTCTGCTCCCCGAGCTCAATAAAAGAGCCCACAACCC
TCACTCGGGGCGCCAGTCCCTCCGATTGACTGAGTCGCCCCGGGTACCCGTGTATCCAATAA
ACCCTCTTGACAGTTGCATCCGACTTGTGGTCTCGCTGTTTCCTTGGGAGGGTCTCCTCTGA
GTGATTGACTACCCGTCAGCGGGGGTCTTTCATTTCGACTTGTGGTCTCGCTGCCTTGG
GAGGGTCTCCTCTGAGTGATTGACTACCCGTCAGCGGGGGTCTTCACATGCAGCATGTAT
CAAAATTAATTTGGTTTTTTTTCTTAAGTATTTACATTAAATGGCCATAGTTGCATTAAT
GAATCGGCCAACGCGCGGGGAGAGGCGGTTTGGCTATTGGCGCTCTTCCGCTTCTCTCGCT
CACTGACTCGCTGCGCTCGGTCTGCTCGGCTGCGGCGAGCGGTATCAGCTCACTCAAAGGC
GGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAAGAACATGTGAGCAAAGG
CCAGCAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCG
CCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGG
ACTATAAAGATACCAGGCGTTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCGAC
CCTGCCGCTTACCGGATACCTGTCCGCCTTCTCCCTTCGGGAAGCGTGCGCTTTCTCA
TAGCTCACGCTGTAGGTATCTCAGTTTCGGTGTAGGTTCGTTTCGCTCCAAGCTGGGCTGTGT
GCACGAACCCCCCGTTTCAGCCCCGACCGCTGCGCCTTATCCGGTAACATATCGTCTTGAGTC
CAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAG
AGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACAC
TAGAAGGACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGT
TGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTGTTGCAA
GCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGG
GTCTGACGCTCAGTGGAACGAAACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAA
AAGGATCTTCACCTAGATCCTTTTAAATTAATAATGAAGTTTGCGCAAATCAATCTAAAG
TATATATGAGTAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTC
AGCGATCTGTCTATTTTCGTTTCATCCATAGTTGCCTGACTCCCCGTGCTGTAGATAACTAC
GATACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTC
ACCGGCTCCAGATTTATCAGCAATAAACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGG

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FIGURE 11A-3

TCCTGCAACTTTATCCGCCTCCATCCAGTCTATTAATTGTTGCCGGGAAGCTAGAGTAAG
TAGTTCGCCAGTTAATAGTTTTCGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTC
ACGCTCGTCGTTTGGTATGGCTTCATTCAGCTCCGGTTCCCAACGATCAAGGCGAGTTAC
ATGATCCCCCATGTTGTGCAAAAAGCGGTTAGCTCCTTCGGTCCTCCGATCGTTGTCAG
AAGTAAGTTGGCCGCAGTGTTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTAC
TGTCATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTG
AGAATAGTGATGCGGCGACCGAGTTGCTCTTGCCCGGCGTCAACACGGGATAATACCGC
GCCACATAGCAGAACTTTAAAAGTGCTCATCATTTGGAAAACGTTCTTCGGGGCGAAAAC
CTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCACTCGTGCACCCAACTG
ATCTTCAGCATCTTTTACTTTTACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAA
TGCCGCAAAAAAGGGAATAAGGGCGACACGGAATGTTGAATACTCATACTCTTCCTTTT
TCAATATTATTGAAGCATTTATCAGGGTTATTGTCTCATGAGCGGATACATATTTGAATG
TATTTAGAAAAATAACAAATAGGGGTTCCGCGCACATTTT

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090304 090304

FIGURE 11B-1

1-845 CMVpormoter/R/U5 5' LTR
 1322 GAG ATG-ATC mutation
 850-2100 extended \square region
 2151-2865 GFP coding region
 2866-2894 GGS SGG linker
 2895-2952 FMDV 2a cleavage sequence
 2953-3004 Bstx1/Bstx1/HinD3/Hpa1/Sal1/Not1 polylinker
 3052-3645 3' LTR
 3652-5715 pGEM backbone (pUC origin, ampR)

ATCACGAGGCCCTTTCGTCTTCAAGAACAGCTTTGCTCTTAGGAGTTTCTAATACATC
 CCAAACCTCAAATATATAAAGCATTTGACTTGTTCTATGCCCTAGTTATTAATAGTAATC
 AATTACGGGGGTCATTAGTTCATAGCCCATATATGGAGTTCCGCGTTACATAACTTACGG
 TAAATGGCCCGCCTGGCTGACCGCCCAACGACCCCGCCCATTTGACGTCAATAATGACG
 TATGTTCCCATAGTAACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTT
 ACGGTAAACTGCCCACCTTGGCAGTACATCAAGTGTATCATATGCCAAGTACGCCCCCTA
 TTGACGTCAATGACGGTAAATGGCCCGCCTGGCATTATGCCCAGTACATGACCTTATGG
 GACTTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGATGCG
 GTTTTGGCAGTACATCAATGGGCGTGGATAGCGGTTTGACTCACGGGGATTTC AAGTC
 TCCACCCCATTTGACGTCAATGGGAGTTTGTTTTGGCACCAAAATCAACGGGACTTTCCA
 AAATGTTCGTAACAACCTCCGCCCCATTGACGCAAATGGGCGGTAGGCATGTACGGTGGA
 GGTCTATATAAGCAGAGCTCAATAAAAGAGCCCAACCCCTCACTCGGGGCGCCAGTC
 CTCCGATTGACTGAGTCGCCCCGGGTACCCGTGTATCCAATAAACCCCTCTTG CAGTTGCA
 TCCGACTTGTGGTCTCGCTGTTCTTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGT
 CAGCGGGGGTCTTTCATTTGGGGGCTCGTCCGGGATCGGGAGACCCCTGCCCAGGGACC
 ACCGACCCACCACCGGGAGGTAAGCTGGCCAGCAACTTATCTGTGTCTGTCCGATTGTC
 TAGTGTCTATGACTGATTTTATGCGCCTGCGTCGGTACTAGTTAGCTAACTAGCTCTGT
 ATCTGGCGGACCCGTGGTGGAAGTACGAGTTCGGAACACCCGGCCGCAACCCTGGGAG

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FIGURE 11B-2

ACGTCCCAGGGACTTCGGGGGCGGTTTTGTGGCCCGACCTGAGTCCAAAAATCCCGAT
CGTTTTGGACTCTTTGGTGCACCCCCCTTAGAGGAGGGATATGTGGTTCTGGTAGGAGA
CGAGAACCTAAACAGTTCCCGCCTCCGTCTGAATTTTTGCTTTTCGGTTTGGGACCGAA
GCCGCGCCGCGCGTCTTGTCTGCTGCAGCATCGTTCTGTGTTGTCTCTGTCTGACTGTG
TTTCTGTATTTGTCTGAAAATATCGGCCCGGGCCAGACTGTTACCACTCCCTTAAGTTT
GACCTTAGGTCACCTGGAAAGATGTCGAGCGGATCGCTCACAACCAGTCGGTAGATGTCA
AGAAGAGACGTTGGGTACCTTCTGCTCTGCAGAATGGCCAACCTTTAACGTCCGATGG
CCGCGAGACGGCACCTTTAACCGAGACCTCATCACCCAGGTAAAGATCAAGGTCTTTTC
ACCTGGCCCCGCATGGACACCCAGACCAGGTCCCCTACATCGTGACCTGGGAAGCCTTGG
CTTTTGACCCCCCTCCCTGGGTCAAGCCCTTGTACACCCTAAGCCTCCGCCTCCTCTT
CCTCCATCCGCCCCGTCTCTCCCCCTTGAACCTCCTCGTTTCGACCCCGCCTCGATCCTC
CCTTTATCCAGCCCTCACTCCTTCTCTAGGCGCCCCCATATGGCCATATGAGATCTTAT
ATGGGGCACCCCCGCCCCCTTGTAACCTTCCCTGACCCTGACATGACAAGAGTTACTAAC
AGCCCCTCTCTCCAAGCTCACTTACAGGCTCTCTACTTAGTCCAGCACGAAGTCTGGAG
ACCTCTGGCGGCAGCCTACCAAGAACAACCTGGACCGACCGGTGGTACCTCACCTTACC
GAGTCGGCGACACAGTGTGGGTCCGCCGACACCAGACTAAGAACCTAGAACCTCGCTGG
AAAGGACCTTACACAGTCCTGCTGACCACCCCCACCGCCCTCAAAGTAGACGGCATCGC
AGCTTGGATACACGCCGCCACGTGAAGGCTGCCGACCCCGGGGTGGACCATCCTCTA
GACTGCCGGATCTCGAGGGATCCACCATGGTGAGCAAGGGCGAGGAGCTGTTACCGGG
GTGGTGCCCATCCTGGTTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTCAGCGTGTG
CGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCTGAAGTTCATCTGCACCA
CCGGCAAGCTGCCCCGTGCCCTGGCCACCCCTCGTGACCACCCTGACCTACGGCGTGCAG
TGCTTCAGCCGCTACCCCGACCACATGAAGCAGCAGCACTTCTTCAAGTCCGCCATGCC
CGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCC
GCGCCGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGCTGAAGGGCATC
GACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACATAACAGCCA
CAACGTCTATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAACCTCAAGATCC
GCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGAACACCCCC
ATCGGCGACGGCCCCGTGCTGCTGCCCGACAACCACTACCTGAGCACCCAGTCCGCCCT
GAGCAAAGACCCCAACGAGAAGCGCGATCACATGGTCTCTGCTGGAGTTCGTGACCGCCG
CCGGGATCACTCTCGGCATGGACGAGCTGTACAAGGAATTCGGAGGTGGCAGCGGTGGC
GGTCAGCTGTTGAATTTTGACCTTCTTAACTTGCGGGAGACGTTCGAGTCCAACCCTGG
GCCACCACCACCATGGAAGCTTCCATTAAATTGGTTAACGTTCGACGCGGCCGCTCGAC
GATAAAATAAAAGATTTTATTTAGTCTCCAGAAAAAGGGGGGAATGAAAGACCCACCT
GTAGGTTTGGCAAGCTAGCTTAAGTAACGCCATTTTGCAGGCATGGAAAAATACATAA
CTGAGAATAGAGAAGTTCAGATCAAGGTTCAGGAACAGATGGAACAGCTGAATATGGGCC
AAACAGGATATCTGTGGTAAGCAGTTTCTGCCCGGCTCAGGGCCAAGAACAGATGGAA
CAGCTGAATATGGGCCAAACAGGATATCTGTGGTAAGCAGTTCTTCCCCGGCTCAGGG
CCAAGAACAGATGGTCCCCAGATGCGGTCCAGCCCTCAGCAGTTTCTAGAGAACCATCA
GATGTTTCCAGGGTGCCCCAAGGACCTGAAATGACCCTGTGCCTTATTTGAACTAACCA
ATCAGTTTCGCTTCTCGCTTCTGTTTCGCGCGCTTCTGCTCCCCGAGCTCAATAAAAGAGC
CCACAACCCCTCACTCGGGGCGCCAGTCCCTCCGATTGACTGAGTCGCCCCGGGTACCCGT
GTATCCAATAAACCCCTCTTGCAAGTTGCATCCGACTTGTGGTCTCGCTGTTCTTGGGAG
GGTCTCCTCTGAGTGATTGACTACCCGTCAGCGGGGGTCTTTTCAATTTCCGACTTGTGGT
CTCGCTGCCTTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGTCAGCGGGGGTCTTCA
CATGCAGCATGTATCAAAATTAATTTGGTTTTTTTTTCTTAAGTATTTACATTAAATGGC
CATAGTTGCATTAAATGAATCGGCCAACGCGCGGGGAGAGGCGGTTTGCCTATTGGCGCT

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FIGURE 11B-3

CTTCCGCTTCCTCGCTCACTGACTCGCTGCGCTCGGTCGTTTCGGCTGCGGCGAGCGGTA
TCAGCTCACTCAAAGGCCGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAA
GAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGG
CGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAATCGACGCTCAAGTCAG
AGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCT
CGTGCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCTTTCTCCCTT
CGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTC
GTTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGCTGCGCCTT
ATCCGGTAACCTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAG
CAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTG
AAGTGGTGGCCTAACTACGGCTACACTAGAAGGACAGTATTTGGTATCTGCGCTCTGCT
GAAGCCAGTTACCTTCGGA AAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCG
CTGGTAGCGGTGGTTTTTTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCT
CAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACCTCACG
TTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAAATT
AAAAATGAAGTTTTCGCAAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGT
TACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTTCGTTTCATCCAT
AGTTGCCTGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCC
CCAGTGCTGCAATGATACCGCGAGACCCACGCTCACC GGCTCCAGATTTATCAGCAATA
AACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCCTGCAACTTTATCCGCCTCCAT
CCAGTCTATTAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGC
GCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTACGCTCGTCGTTTGGTATGGCT
TCATTTCAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAA
AAAAGCGGTTAGCTCCTTCGGTCCTCCGATCGTTGTCAGAAGTAAGTTGGCCGCAGTGT
TATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTACTGTTCATGCCATCCGTAAGA
TGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAATAGTGTATGCGGCG
ACCGAGTTGCTCTTGCCCGGCGTCAACACGGGATAATACCGCGCCACATAGCAGAACTT
TAAAAGTGCTCATCATTGGAAAACGTTCTTCGGGGCGAAAACCTCTCAAGGATCTTACCG
CTGTTGAGATCCAGTTTCGATGTAACCCACTCGTGCACCCAACTGATCTTCAGCATCTTT
TACTTTTACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGC AAAATGCCGCAAAAAGG
GAATAAGGGCGACACGGAAATGTTGAATACTCATACTCTTCCTTTTTTCAATATTATTGA
AGCATTTATCAGGGTTATTGTCTCATGACATTAACCTATAAAAATAGGCGT

496247066

1. *Phragmites australis* (Cav.) Trin. ex Steud.
 2. *Spartina patens* (Muhl.) Bosc.
 3. *Scirpus americanus* (L.) Link.
 4. *Distichlis spicata* (L.) Nees
 5. *Eleocharis acicularis* (L.) Rostk Schmidt
 6. *Eleocharis obtusa* (L.) Nees
 7. *Eleocharis palustris* (L.) Rostk Schmidt
 8. *Eleocharis tenuis* (L.) Rostk Schmidt
 9. *Eleocharis acicularis* (L.) Rostk Schmidt
 10. *Eleocharis obtusa* (L.) Nees
 11. *Eleocharis palustris* (L.) Rostk Schmidt
 12. *Eleocharis tenuis* (L.) Rostk Schmidt
 13. *Eleocharis acicularis* (L.) Rostk Schmidt
 14. *Eleocharis obtusa* (L.) Nees
 15. *Eleocharis palustris* (L.) Rostk Schmidt
 16. *Eleocharis tenuis* (L.) Rostk Schmidt
 17. *Eleocharis acicularis* (L.) Rostk Schmidt
 18. *Eleocharis obtusa* (L.) Nees
 19. *Eleocharis palustris* (L.) Rostk Schmidt
 20. *Eleocharis tenuis* (L.) Rostk Schmidt
 21. *Eleocharis acicularis* (L.) Rostk Schmidt
 22. *Eleocharis obtusa* (L.) Nees
 23. *Eleocharis palustris* (L.) Rostk Schmidt
 24. *Eleocharis tenuis* (L.) Rostk Schmidt
 25. *Eleocharis acicularis* (L.) Rostk Schmidt
 26. *Eleocharis obtusa* (L.) Nees
 27. *Eleocharis palustris* (L.) Rostk Schmidt
 28. *Eleocharis tenuis* (L.) Rostk Schmidt
 29. *Eleocharis acicularis* (L.) Rostk Schmidt
 30. *Eleocharis obtusa* (L.) Nees
 31. *Eleocharis palustris* (L.) Rostk Schmidt
 32. *Eleocharis tenuis* (L.) Rostk Schmidt
 33. *Eleocharis acicularis* (L.) Rostk Schmidt
 34. *Eleocharis obtusa* (L.) Nees
 35. *Eleocharis palustris* (L.) Rostk Schmidt
 36. *Eleocharis tenuis* (L.) Rostk Schmidt
 37. *Eleocharis acicularis* (L.) Rostk Schmidt
 38. *Eleocharis obtusa* (L.) Nees
 39. *Eleocharis palustris* (L.) Rostk Schmidt
 40. *Eleocharis tenuis* (L.) Rostk Schmidt
 41. *Eleocharis acicularis* (L.) Rostk Schmidt
 42. *Eleocharis obtusa* (L.) Nees
 43. *Eleocharis palustris* (L.) Rostk Schmidt
 44. *Eleocharis tenuis* (L.) Rostk Schmidt
 45. *Eleocharis acicularis* (L.) Rostk Schmidt
 46. *Eleocharis obtusa* (L.) Nees
 47. *Eleocharis palustris* (L.) Rostk Schmidt
 48. *Eleocharis tenuis* (L.) Rostk Schmidt
 49. *Eleocharis acicularis* (L.) Rostk Schmidt
 50. *Eleocharis obtusa* (L.) Nees
 51. *Eleocharis palustris* (L.) Rostk Schmidt
 52. *Eleocharis tenuis* (L.) Rostk Schmidt
 53. *Eleocharis acicularis* (L.) Rostk Schmidt
 54. *Eleocharis obtusa* (L.) Nees
 55. *Eleocharis palustris* (L.) Rostk Schmidt
 56. *Eleocharis tenuis* (L.) Rostk Schmidt
 57. *Eleocharis acicularis* (L.) Rostk Schmidt
 58. *Eleocharis obtusa* (L.) Nees
 59. *Eleocharis palustris* (L.) Rostk Schmidt
 60. *Eleocharis tenuis* (L.) Rostk Schmidt
 61. *Eleocharis acicularis* (L.) Rostk Schmidt
 62. *Eleocharis obtusa* (L.) Nees
 63. *Eleocharis palustris* (L.) Rostk Schmidt
 64. *Eleocharis tenuis* (L.) Rostk Schmidt
 65. *Eleocharis acicularis* (L.) Rostk Schmidt
 66. *Eleocharis obtusa* (L.) Nees
 67. *Eleocharis palustris* (L.) Rostk Schmidt
 68. *Eleocharis tenuis* (L.) Rostk Schmidt
 69. *Eleocharis acicularis* (L.) Rostk Schmidt
 70. *Eleocharis obtusa* (L.) Nees
 71. *Eleocharis palustris* (L.) Rostk Schmidt
 72. *Eleocharis tenuis* (L.) Rostk Schmidt
 73. *Eleocharis acicularis* (L.) Rostk Schmidt
 74. *Eleocharis obtusa* (L.) Nees
 75. *Eleocharis palustris* (L.) Rostk Schmidt
 76. *Eleocharis tenuis* (L.) Rostk Schmidt
 77. *Eleocharis acicularis* (L.) Rostk Schmidt
 78. *Eleocharis obtusa* (L.) Nees
 79. *Eleocharis palustris* (L.) Rostk Schmidt
 80. *Eleocharis tenuis* (L.) Rostk Schmidt
 81. *Eleocharis acicularis* (L.) Rostk Schmidt
 82. *Eleocharis obtusa* (L.) Nees
 83. *Eleocharis palustris* (L.) Rostk Schmidt
 84. *Eleocharis tenuis* (L.) Rostk Schmidt
 85. *Eleocharis acicularis* (L.) Rostk Schmidt
 86. *Eleocharis obtusa* (L.) Nees
 87. *Eleocharis palustris* (L.) Rostk Schmidt
 88. *Eleocharis tenuis* (L.) Rostk Schmidt
 89. *Eleocharis acicularis* (L.) Rostk Schmidt
 90. *Eleocharis obtusa* (L.) Nees
 91. *Eleocharis palustris* (L.) Rostk Schmidt
 92. *Eleocharis tenuis* (L.) Rostk Schmidt
 93. *Eleocharis acicularis* (L.) Rostk Schmidt
 94. *Eleocharis obtusa* (L.) Nees
 95. *Eleocharis palustris* (L.) Rostk Schmidt
 96. *Eleocharis tenuis* (L.) Rostk Schmidt
 97. *Eleocharis acicularis* (L.) Rostk Schmidt
 98. *Eleocharis obtusa* (L.) Nees
 99. *Eleocharis palustris* (L.) Rostk Schmidt
 100. *Eleocharis tenuis* (L.) Rostk Schmidt

ATACACGAGGCCCTTTCTGCTCTTCAAGAACAGACTTTGCTCTTAGGAGTTTCCCTAATACATCCCAAACCTCAAAT-
ATATAAAGCATTGTGACTTGTCTATGCCCTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTTCATAG
CCATATATGGAGTTCCGCGTTACATAAATTACGGTAAATGGCCCGCTGGCTGACCGCCCAACGACCCCCG
CCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCCATTGACGTCAATGGG
TGGAGTATTTACGGTAAACTGCCCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTACGCCCCCTATT
GACGTCAATGACGGTAAATGGCCCGCTGGCATTATGCCCAGTACATGACCTTATGGGACTTTCCCTACTTG
GCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGTATGCGGTTTTTGGCAGTACATCAATGGGCGTG
GATAGCGGTTTTGACTCACGGGGATTTCCAAGTCTCCACCCCATTGACGTCAATGGGAGTTTGTTTTGGCAC
CAAAATCAACGGGACTTTCCAAAATGTTCGTAACAACCTCCGCCCCATTGACGCAAAATGGGCGGTAGGCATGT
ACGGTGGGAGGTCTATATAAGCAGAGCTCAATAAAAAGAGCCCAACAACCCCTCACTCGGGGCGCCAGTCCCTC
CGATTGACTGAGTCGCCCCGGGTACCCGTGTATCCAATAAAACCCCTCTTGACAGTTGCATCCGACTTGTGGTCT
CGCTGTTCCTTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGTCAGCGGGGGTCTTTCATTTGGGGGGCTC
GTCCGGGATCGGGAGACCCCTGCCCAGGGACCACCGACCCACCACCGGGAGGTAAGCTGGCCAGCAACTTA
TCTGTGTCTGTCCGATTGTCTAGTGTCTATGACTGATTTTATGCGCCTGCGTCGGTACTAGTTAGCTAACT
AGCTCTGTATCTGGCGGACCCGTGGTGGAACTGACGAGTTCGGAACACCCGCGCCGAACCTTGGGAGACGT
CCCAGGGACTTCGGGGCCGTTTTTGTGGCCGACCTGAGTCCAAAAATCCCGATCGTTTTGGAGCATCTTTTG
GTGCACCCCTTAGAGGAGGGATATGTGGTTCTGGTAGGAGCAGAAACCTAAAAACAGTTCCCGCCTCCG
TCTGAATTTTTGTCTTTCGGTTTGGGACCGAAGCCGCGCCGCGCTCTTGTCTGTCTGCAGCATCGTTCTGTG
TTGTCTCTGTCTGACTGTGTTTCTGTATTTGTCTGAAAAATATCGGCCCGGGCCAGACTGTTACCAC'TCCCT
TAAGTTTGACCTTAGGTCACTGGAAGATGTGAGCGGATCGCTCACAACCAGTCGGTAGATGTCAAGAAG
AGACGTTGGGTTACCTTCTGCTCTGCAGAATGGCCAACCTTTAACGTCGGATGGCCGCGAGACGGCACCTT
TAACCGAGACCTCATCACCCAGGTAAAGATCAAGGTCTTTTCACTTGGCCCGCATGGACACCCAGACCAGG
TCCCTTACATCGTGACCTGGGAAGCCTTGGCTTTTGACCCCCCTCCCTGGGTCAAGCCCTTTGTACACCCT
AAGCCTCCGCTCCTCTTCCCTCCATCCGCCCCGTCTCTCCCCCTTGAACCTCCTCGTTCGACCCCGCCTCG
ATCCTCCCTTTATCCAGCCCTCACTCCTTCTCTAGGCGCCCCCATATGGCCATATGAGATCTTATATGGGG
CACCCCGCCCCCTTGTAACCTTCCCTGACCCTGACATGACAAGAGTTACTAACAGCCCCCTCTCTCCAAGCT
CACTTACAGGCTCTCTACTTAGTCCAGCACGAAGTCTGGAGACCTCTGGCGGCAGCCTACCAAGAACAAC
GGACCGACCGGTGGTACCTCACCTTACCGAGTCGGCGACACAGTGTGGGTCCGCCGACACCAGACTAAGA
ACCTAGAACCTCGCTGGAAGGACCTTACACAGTCTTGTGACCACCCCCACCGCCCTCAAAGTAGACGGC
ATCGCAGCTTGGATACACGCCGCCACGTGAAGGCTGCCGACCCCGGGGGTGGACCATCCTCTAGACTGCC
GGATCTCGAGGGATCCACCACCATGGACCCCATTAATTTGGAATTCGGGGCCCAAGCTTTGTTAACGTCTG
ACGCGGCCCGCGCTCGACGATAAAAATAAAGATTTTATTTAGTCTCCAGAAAAAGGGGGGAATGAAAGACCC
CACCTGTAGGTTTGGCAAGCTAGCTTAAGTAACGCCATTTTGCAAGGCATGGAAAAATACATAACTGAGAA
TAGAGAAGTTCAGATCAAGGTCAAGAACAGATGGAACAGCTGAATATGGGCCAAACAGGATATCTGTGGTA
AGCAGTTCTTGCCCCGGCTCAGGGCCAAGAACAGATGGAACAGCTGAATATGGGCCAAACAGGATATCTGT
GGTAAGCAGTTCTTGCCCCGGCTCAGGGCCAAGAACAGATGGTCCCCAGATGCGGTGACGCCCTCAGCAGT
TTCTAGAGAACCATCAGATGATTTTTCAGGGTGGCCCCAAGGACCTGAAATGACCTTGTGCC'TTATTTGAACTA
ACCAATCAGTTTCGCTTCTCGCTTCTGTTTCGCGCGCTTCTGCTCCCCGAGCTCAAATAAAAAGAGCCCAAC
CCTCACTCGGGGCGCCAGTCTCCGATTGACTGAGTCGCCCCGGGTACCCGTGTATCCAATAAACCCCTCTTG

FIGURE 11C-2

CAGTTGCATCCGACTTGTGGTCTCGCTGTTCCCTTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGTCAGC
 GGGGGTCTTTCATTTCCGACTTGTGGTCTCGCTGCCCTTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGT
 CAGCGGGGGTCTTCACATGCAGCATGTATCAAAATTAATTTGGTTTTTTTTTTCTTAAGTATTTACATTAAAT
 GGCCATAGTTGCATTAATGAATCGGCCAACGCGGGGAGAGGCGGTTTGCGTATTGGCGCTCTTCCGCTT
 CCTCGCTCACTGACTCGCTGCGCTCGGTCTCGGTGCGGCGAGCGGTATCAGCTCACTCAAAGGCGGTA
 ATACGGTTATCCACAGAAATCAGGGGATAACGCAGGAAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAG
 GAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATC
 GACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCC
 CTCGTGCGCTCTCCTGTTCCGACCCGCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGT
 GCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCTGCTCCAAGCTGGGCTGTG
 TGCACGAACCCCCGTTTACGCCGACCGCTGCGCTTATCCGGTAACATATCGTCTTGAGTCCAACCCGGTA
 AGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGC
 TACAGAGTTCTTGAAGTGGTGGCTAACATACGGCTACACTAGAAGGACAGTATTTGGTATCTGCGCTCTGC
 TGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGT
 GGTTTTTTTTGTGTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTC
 TACGGGGTCTGACGCTCAGTGGAACGAAAATCAGCTTAAGGGATTTTGGTCAAGAGATTATCAAAAAGGA
 TCTTCACCTAGATCCCTTTTAAATTAATAATGAAGTTTGCGCAAATCAATCTAAAGTATATATGAGTAACT
 TGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTTCGTTTCATCCAT
 AGTTGCCTGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAA
 TGATACCGCGAGACCCACGCTCACCGGCTCCAGATTTATCAGCAATAAACCAGCCAGCCGGAAGGGCCGAG
 CGCAGAAGTGGTCCCTGCAACTTTATCCGCCCTCCATCCAGTCTATTAATTTGTTGCCGGAAGCTAGAGTAAG
 TAGTTGCCAGTTAAATAGTTTGCGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTACGCTCGTCTGT
 TTGGTATGGCTTCATTCAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAA
 AAAGCGGTAGCTCCCTTCGGTCTCCGATCGTTGTCAGAAGTAAGTTGGCCGAGTGTTATCACTCATGGT
 TATGGCAGCACTGCATAATTTCTCTTACTGTCTATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAAGTACT
 CAACCAAGTCATTTCTGAGAATAGTGTATGCGGCGACCGAGTTGCTCTTGCCCGGCGTCAACACGGGATAAT
 ACCGCGCCACATAGCAGAACTTTAAAAGTGCTCATCATTTGGAAAACGTTCTTCGGGGCGAAAACCTCTCAAG
 GATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCACTCGTGCACCCAACATGATCTTCAGCATCTTTTA
 CTTTCACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAAGGGAATAAGGGCGACA
 CGGAAATGTTGAATACTCATACTCTTCCTTTTTCAATATTATTGAAGCATTTATCAGGGTTATTGTCTCAT
 GACATTAACCTATAAAAAATAGGCGT

TCGTCGCTCTCCTGTTCCGACCCGCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGT

FIG 12A

(1) C12ScFas Survival construct

C12ScFas: epsilon-cFas(CD95)-Ires-Hygro-BGH PolyA put into C12s vector backwards so that no leaky transcription happens through the cmv promoter.

atcacgaggccctttctgtcttcaagaacagcttttgcctttaggagtttcttaatacatcccaaaactcaaatatataaagc
atttgactgttctatgccctagttatttaataagtaatacaattacggggtcattagttcatagcccatatagggagttccg
cgttacataacttacggtaaatggcccgctgggtgacccgccaacgacccccgccattgacgtcaataatgacgtatg
ttcccatagtaacgccaatagggaactttccattgacgtcaatgggtggagattttacggtaaactgcccacttggcagta
catcaagtgtatcatatgccaagtacgccccctattgacgtcaatgacggtaaatggcccgctggcattatgcccagta
catgaccttatgggactttctacttggcagtcacatcttgcgtattgacgtcgtattaccatgggtgagcgggtttggc
agtacatcaatggcggtggatagcgggtttgactcacggggatttccaagtctccaccccatgacgtcaatgggagtttg
tttggcaccaaaatcaacgggactttccaaaatgtcgtacaactccgccccattgacgtcaaatggcggttaggcattg
acgggtgggaggtctatatagcagagctcaataaaagagccacacccctcactcggggcgccagtcctccgattgact
gagtcgccccgggtgacccgttcccaataaacctcttgcgtattgacgtcgtattggttctcgtgttcttgggaggg
tctctctgagtgattgactaccggtcagcgggggtcttctatttgggggtcgtccgggatcgggagacccctgccag
ggaccaccgacccaccacgggaggttaagctggccagcaacttatctgtgtctgtccgattgtctagtgtctatgactga
ttttatgcgctcgtcgttacttagttagctaatagctctgtatctggcgacccgtggtggaactgacgagttcggaa
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tcgttttggactcttgggtgaccccccttagaggagggatagtgggttctggtaggagacgagaacctaaaaacgttcc
cgctcctgtctgaatttttgccttccggttgggacggaagcgcgcgcgcgtcttgtctgtcgcagcatcgttctgtgt
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cttaggtcactggaagatgtcgagcggatcgtctacacagctcggttagatgtcaagaagagacgttgggttaccttct
gctctgcagaatgggcaaccttttaacgtcggatggcgcgagacggcactttaaccgagacctcatcaccaggttaag
atcaaggtcttttcaacctggccgcgcatggacaccagaccaggtccctacatcgtgacctgggaagccttggcttttga
ccccctccttgggtcaagcccttgtacaccctaaagcctcgcctcctcttctcctccatccgccccgtctctcccccttg
aacctcctcgttcgaccccgctcgatcctcctcttaccagccctcactcctctcttaggcgcccccatggcccatat
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0956347 "0956347"

THE

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GCTCGAcatAAAATAAAGATTTTATTAGTCTCCAGAAAAGGGGGAATGAAAGACCCACCTGTAGGTTTGGCAAag
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ATGGAACAGGCAATAAAAGAGCCCAACCCCTCACTCGGGGCGCCAGTCTCTCGATTGACTGAGTCGCCCGGTACCCG
TGTATCCAATAAACCTCTTGCAAGTTCGATCCGACTTGTGGTCTCGCTGTTTCTTGGGAGGGTCTCCTCTGAGTGATTGA
CTACCCGTCAGCGGGGTCTTTCAcatgcaGCATGTATCAAAATTAATTTGGTTTTTTTTTCTTAAAGTATTTACATTAAAT
GGCCATagtttcGTAATCATGGTCATAGCTGTTTCTGTGTGAAATTGTTATCCGCTCACAATTCCACACAACATACGAG
CCGGAAGCATAAAGTGTAAGCCTGGGGTGCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCCGCT
TTCCAGTCGGGAAACCTGTCTGTGCCAGCTGCATTAATGAATCGGCCAACGCGCGGGGAGAGGCGGTTTTCGCTATTGGGCG
CTCTTCCGCTTCTCTCGCTCACTGACTCGCTGCGCTCGGTCTCGGTGCGGCGAGCGGTATCAGCTCACTCAAAGGCGG
TAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAAGAATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGT
AAAAAGGCCGCGTTGCTTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAG
GTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCC
TGCCGCTTACCGGATACCTGTCCGCTTTTCTCCCTTCGGGAAGCGTGCGCTTTTCTCATAGCTCACGCTGTAGGTATCTC
AGTTCGGTGTAGGTGCTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCGTTACGCCGACCGCTGCGCTTATCCGG
TAACTATCGTCTTGAGTCCAACCCGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAG
CGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGGACAGTATTTGGTATC
TGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGG
TGGTTTTTTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGT
CTGACGCTCAGTGAACGAAAACCTACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTT
TTAAATTAATAAATGAAGTTTGGCGAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAAT
CAGTGAGGCACCTATCTCAGCGATCTGTCTATTTCTGTTTCATCCATAGTTGCGCTGACTCCCCGTCGTGTAGATAACTACGA
TACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGATTTATCAGCA
ATAAACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCTGCAACTTTATCCGCCCTCCATCCAGTCTATTAATTGTTG
CCGGAAGCTAGAGTAAGTAGTTTCGCCAGTTAATAGTTTGGCGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTAC
GCTCGTCTGTTTGGTATAGGCTTCATTCAGCTCCGGTTCCTAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAA
AAAGCGGTTAGCTCCTTCGGTCTCCGATCGTTGTCAGAAGTAAGTTGGCCGCGAGTGTATCACTCATGGTTATGGCAGC

FIG 12C

ACTGCATAATTCTCTTACTGTCATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGagtgactcaaccaagtcattctgag
aatagtgtatgcgggcaccgagttgctcttgccggcggtcaacacgggataataccgcgccacatagcagaactttaaa
gtgctcatcattggaaaacgttcttcggggcgaaaactctcaaggatcttacgcgtgttgagatccagttcgatgtaacc
cactcgtgcacccaactgatcttcagcatcttttactttcaccagcgtttctgggtgagcaaaaacaggaaggcaaaatg
ccgcaaaaaagggaataaggggcgacacggaaatgttgaatactcatactcttctcttttcaatatatttgaagcatttat
cagggttattgtctcatgacattaacctataaaaaataggcgt

[illegible]

FIG 13A

(2) Ahhhh: Survival construct

2.) Ahhhh: epsilon-cFas' (CD8 or mLy2)-Ires-Hygro-BGHpolyA also in C12s backwards

atcacgaggccctttctgcttcaagaacagctttgtcttaggagtttctataacatccaaactcaaatatataaagc
atttgacttggtctatgccctagttattaatagtaataacacggggtcattagttcatagcccatatatggagttccg
cggtacataacttacggtaaatggcccgctggctgacgcgccacgacccccgcccatgacgtcaataatgacgtatg
ttcccatagtaaacccaatagggaactttccattgacgtcaatgggtggagatttacggtaaaactgccacttggcagta
catcaagtgtatcatatgccaaagtacgccccctattgacgtcaatgacggtaaatggcccgctggcattatgcccagta
catgaccttatgggactttcctacttggcagtagacgtacgtattagtcacgtcattaccatgggtgatggcgttttggc
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tttggcaccaaaatcaacgggactttccaaaatgtcgtaacaactccgccccattgacgcaaatggcggttaggcattgt
acgggtgggaggtctatataagcagagctcaataaaagagcccaacccctcactcggggcgccagtcctccgattgact
gagtcgccccgggtacccgtgtatccaataaacctcttgcagttgcacccgacttgggtctcgctgttcttgggaggg
tctcctctgagtgattgactaccgctcagcgggggtctttcatttgggggtcgtccgggacgaggagacccctgccag
ggacacgcacccacccgggaggtagtaagtcggcagcacttatctgtgtctgctcagattgtctagtgtctatgactga
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caccggcgccgaacccctgggagacgtcccagggaacttggggggcggttttggggcgccgactgagtcacaaaatcccga
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tgtctctgtctgactgtgtttctgtatttgcctgaaaaatattggggcgccgactgttaccactcccttaagtttgac
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gctctgcagaatggccaacctttaacgtcggatggcgcgagacggcacctttaaccgagacctcatcaccaggttaag
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accgacgggtggtacctcacccttaccgagtcggcgacacagttgggtccgcccagacacagactaagaacctagaacct
cgctggaaaggaccttacacagtcctgctgaccaccccccacggcctcaaagtagacggcatcgagcttggatcacgc
cgccacgtgaaggctgcccaccccggggtggaccatcctctagactgccGGATCTCGAGGGATCTCCCCAGCATGCC

TGCTATTGTCTTCCCAATCTCCCCCTTGCTGTCTTCCCCACCCACCCCAAGGATAGAATGACACCTACTCAGACAA

TGCGATGCAATTTCTTCATTTTATTAGGAAAGGACAGTGGGAGTGGCACCTTCCAGGGTCAAGGAAGGCACGGGGGAGGG

GCAACAACAGATGGCTGGCAACTAGAAGGCACAGTCGAGGtCTAGCTTGCCAAACCTACAGGTGGGGTCTTTTCATTCCT

CCCTTTTCTGGAGACTAAATAAAATCTTTTATTTTatcgatagatcccggtcggcatctactctattccttttgcctcg
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tctgcaagagatacaagattggcctttttttagatctttaaataatgtgtcatagccttcttcttccatgaagttgatg
ccaattacgaagcagttgaactttctgttctgctgtgtcttggacattgtcattctttagatctcatctattttggcttcat
tgacaccattcttctgaacaaagcctttaacttgacttagtgatgactccagcaatagtggtgatataatttactcaag

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aacggtgagggccatgtGTGGCTTTACCAACAGTACCGGAATGCCAAGCTTGCGGCCGCTTAAGAGCTGTAATTGAACCTGG

GAGTGGACACCTGTGGAGAGAAAGGCAAAGTGGATGTAGTAAGACCAATAGGTGCCTATCAGAAACGCAAGAGTCTTCT

CTGTCTCGACAAGCCCAGTTTCTATTGGTCTCCTTAAACCTGTCTTGTAACCTTGATACTTACCTGCCCAGTGCCTCAGG

ACCAACTTctgcaggaattcctggacagctcccagatgatcagtaaccgtgggttgttatttctgtgccccggcagtgaggc
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gccctcggggGcgcgtgtcccagatgtgtgtgcagggcctcctgtatggccgcagccctcgtcctgtgacccgcttggag
ctggcaccctgagtggtggcctcacCTGTACTCACTCCCAGGTCACTGTCTCctgacGCGGCCGCTCGAcgatAAAATAA

AAGATTTTATTATTAGTCTCCAGAAAAAGGGGGGAATGAAAGACCCACCTGTAGGTTTGGCAAGctagcTTAAGTAACCCA

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TCTTTCAcatgcaGCATGTATCAAAATTAATTTGGTTTTTTTTCTTAAGTATTACATTAAATGGCCATagtttcGTAAT

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AGTTACCTTCGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTGTTGCA

AGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAAC

GAAAACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTACCTAGATCCTTTTAAATTAAAAATGAAG

TTTGCGCAAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCT

CAGCGATCTGTCTATTTTCGTTTCATCCATAGTTGCCTGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCA

TCTGGCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTACCGGCTCCAGATTTATCAGCAATAAACCAGCCAGCCGG

AAGGGCCGAGCGCAGAAGTGGTCCTGCAACTTTATCCGCTCCATCCAGTCTATTAATTGTTGCCGGGAAGCTAGAGTAA

GTAAGTTCGCCAGTTAATAGTTTGCGCAACGTTGTTGCCATTGTACAGGCATCGTGGTGTACGCTCGTCTTGGTATG

FOI b7E b7C b7D

FIG 13C

GCTTCATTCAGCTCCGGTTCCTAACGATCAAGGCGAGTTACATGATCCCCATGTTGTGCAAAAAAGCGGTTAGCTCCTT
CGGTCCTCCGATCGTTGTCAGAAAGTAAGTTGGCCGAGTGTTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTA
CTGTCATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGagtactcaaccaagtcattctgagaatagtgtatgcggcga

ccgagttgctcttgcccggcggtcaacacgggataataccgcgccacatagcagaactttaaaagtgctcatcattggaaa
acgttcttcggggcgaaaactctcaaggatcttaccgctggtgagatccagttcgatgtaacccactcgtgcacccaact
gatcttcagcatcttttactttcaccagcggttctgggtgagcaaaaacaggaaggcaaaatgccgcaaaaaaggggaata
agggcgacacggaaaatggtgaatactcatactcttcctttttcaatattattgaagcatttatcagggttattgtctcat
gacattaacctataaaaaataggcgt

FIG 13C